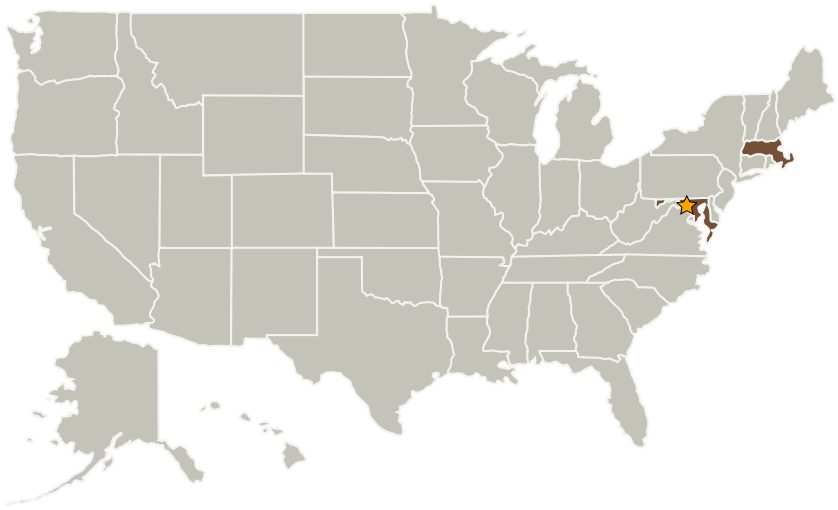
Ultra-Lightweight Hybrid Structured Mirror, Phase I

Completed Technology Project (2005 - 2005)

Project Introduction

MMCC is proposing herewith a hybrid structured mirror that combines the advantages of SiC membrane and magnesium graphite composite. The significance of magnesium graphite composite is that it can be produced with quasi-isotropic properties and closely matched CTE down to cryogenic temperatures. In the proposed hybrid mirror, SiC membranes are used as the front and back faces of the mirror and an egg crate structure made of magnesium graphite composite is sandwiched between the SiC membranes. The proposed hybrid mirror structure is expected to have high specific stiffness, good thermal stability, be light weight, and producable at moderate cost.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Metal Matrix Cast Composites, LLC	Supporting Organization	Industry	Waltham, Massachusetts

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
Maryland	Massachusetts

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Yuejian Chen

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.2 Observatories
    - TX08.2.1 Mirror Systems